REMARKS

WITHDRAWAL OF THE FINALITY OF THE REJECTION

Applicants had requested withdrawal of the finality of the rejection found in the last Office Action mailed November 25, 2004 (Paper No. 11142003) as premature. The request was denied in the Advisory Action. Although we still contend the finality of the rejection was improper, applicants' attorney would like to thank the Examiner for the effort and the extension "beyond-the-normal" in providing carefully crafted reasons for denying the request. The stated reasons provide additional information upon which these applicants may now rely in continuing prosecution with a better understanding of the bases upon which the statutory rejections are based. The applicants will reply to those rejections with more pertinent answers and responses. Again, we do not agree with those reasons, as will be explained in more detail below, but providing them is most helpful and should be the norm for the PTO.

Applicants note that the Dean reference was dropped because the riser reactor was "not functionally capable of performing the intended use of a hydrocarbon cracking reaction .." Although applicants' attorney does not disagree with the Examiner's assessment of the teachings of the Dean patent, that assessment is difficult to merge with the explanation given on the following page relating to the weight given the various "configured to" parameters in the riser reactor claims. Specifically, it is explained that "patentable weight was given to the functional capability of the riser reactor to conduct a hydrocarbon cracking reaction ...[but]... the specific parameters relating to the hydrocarbon cracking reaction, i.e., reaction temperatures, ratios... were not given patentable weight, as such parameters are not considered elements of the apparatus, but process limitations."

As a matter of practical reactor engineering, the magic of getting a chemical reaction to actually produce a product is via manipulation of the physical parameters. Harry Potter was not a chemical engineer. Other than Mr. Potter and friends, waving at a reactor and asking that it "react" doesn't get the chemical product to appear.

The desired chemical reaction occurs as a result of the proper placement of the reactants, in the proper ratios, and in many cases, manipulation of the proper temperature, proper pressure, proper catalysts, and choice of reactor design. In concept and in practice, the reaction parameters are not separable from the reaction itself.

It is well-established law that during prosecution, The PTO must compare each limitation in a claim to the material in the prior art. In a claim reciting both a reaction result (hydrocarbon cracking) and reaction parameters in a functional way to specify the reactor, it just seems logical that the reaction parameters -- the very things that the engineers are able to manipulate -- must be given weight in determining the functional form of the reactor.

Rejection of claims 1-8 under 35 U.S.C. § 112, paragraph two

Claims 1-8 stand rejected under 35 U.S.C. 112, second paragraph, as indefinite. In support of the rejection the Examiner states:

"Regarding claim 1, it is unclear as to the structural limitation applicants are attempting to recite by,

> "...the first reaction zone *is configured so* that a hydrocarbon cracking reaction taking place in the first reaction zone takes place at a higher reaction temperatures, higher ratios of catalyst to oil, and shorter reaction times than, respectively, a reaction temperature, ratio of catalyst to oil, and reaction time in a second reactor zone..." (lines 9-12).

"since it is unclear as to the corresponding structural elements(s) that enable the claimed apparatus to exhibit the recited process limitations of a higher reaction temperature, a higher ratio of C/O and a shorter reaction time within the first reaction zone. Similarly, it is unclear as to the structural limitation applicants are attempting to recite by,

> "...the second reaction zone *is configured so* that a hydrocarbon cracking reaction taking place in the second reaction zone takes place at a lower reaction temperature, lower ratio of catalyst to oil, an d longer reaction time than, respectively, the reaction temperature, ratio of catalyst to oil, and reaction time in the first reactor zone..." (lines 15-18)

"since it is unclear as to the corresponding structural element(s) that enable the claimed apparatus to exhibit the recited process limitation of a lower reaction temperature, a lower ratio of C/O and longer reaction time within the second reaction zone. (i.e. Are these properties *inherent* of the apparatus, by virtue of the diameter of

the second reaction zone being larger than the first reaction zone? Are these properties *inherent* of the apparatus, by virtue of the placement of catalyst and/or feed lines? Is applicant attempting to claim a built-in heat exchanger and/or quenching mediums, as disclosed on page 5, second paragraph?)"

Applicants disagree with the rejection. It is legally improper.

First of all, claim 1 has been amended in two ways. The applicants have added a limitation: catalytic cracking catalyst is present in each of pre-lift zone, first reaction zone, and second zone. The applicants have removed certain functional limitations from the characterization of the "first reaction zone" and the "second reaction zone." This leaves only the bare recitation of the relative zone heights and zone diameters. Consequently, the removal of the functional language, while rendering the claims broader, also renders the rejection mooted since the specific language complained of is no longer present in the claims.

Secondly, claims 9-16 are substantially the same as were claims 1-8 before the concurrent amendment. The rejection of previous claims 1-8 was inappropriate. The stated rejection is a rejection for vagueness. It is the function of 35 USC 112, paragraph two, to assure that the breadth of the claims is understood by the reader of the patent. It is a function of 35 USC 112, paragraph one, to provide guidance to that reader by explaining **how** to do what is in those claims. It is **not** a requirement of the statute that the claims themselves describe how to practice a functional limitation found in those very same claims. That is the function of the specification. The specification here shows how to configure the specific reactor zones to achieve the functions specified in claim 9 (and former claim 1). See, *in re Hammack*, 166 USPQ 204 (CCPA 1970); *W.L. Gore v. Garlock*, 220 USPQ 303 (Fed. Cir. 1983), and *Orthokinetics v. Safety Travel Chairs*, 1 USPQ2d 1081 (Fed Cir. 1986) and many others.

As the PTO well knows, apparatus may be claimed using functional limitations, including specifically, process limitations. Such limitations are found here, in claim 9 (and former claim 1). Despite the inquiry made by the Examiner in the Office Action, applicants only assert that the

specific components of the apparatus be "configured" to perform the specific reaction functions recited there. The claims are clear and they are presented in a form long-permitted by the courts.

Furthermore, there is no requirement that the claims themselves tie any included functional limitations specifically to the structure of the device as is being questioned by the Examiner here. With regard to the functional limitations, the scope of inquiry must only be this: can one of ordinary skill in the art review a specific apparatus, assess diameters and heights of the first and second reaction zones and assess whether reaction temperature, catalyst to oil ratio, and reaction time are variously higher, higher, and shorter in the first reaction zone than in the second? If so, the statutory requirements are met.

Here, such measurements are easily made and the rejection under 35 USC 112, paragraph two, is consequently improper and should be withdrawn.

Rejections Under 35 U.S.C. § 102

Claim 1 -- Cabrera

Claim 1 stands rejected under 35 U.S.C. 102(b) as anticipated by Cabrera (US 4,859,424). In support of the rejection the Examiner states:

> "Cabrera (FIG. 2; column 7, lines 6-31), as best understood, discloses a riser reactor having a substantially vertical linear axis, a riser reactor height, a reactor bottom and a reactor top, wherein the riser reactor comprises, in order from the reactor bottom
>
> "a) a prelift zone (i.e., pipeline **68**) having a prelift zone diameter and height;
>
> "b) a first reaction zone (i.e., unlabeled riser zone immediately downstream from pipeline **68**, communicating with WYE section **66**) having a first reaction zone diameter and height;
>
> "c) a second reaction zone (i.e. external riser section **70**) having a second reaction zone height and a diameter that is larger than the first reaction zone diameter, and

"d) an outlet zone (i.e. internal riser **72**) having an outlet zone diameter that is reduced with respect to the second reaction zone **70** diameter.

"Further defining the functional limitations as claimed in lines 9-12 and 5-18, the specification (page 5, lines 11-13) recites,

> "...the feedstock is contacted with hot catalyst in the first reaction zone *with the result that* the primary cracking reaction takes place at higher reaction temperature, higher C/O ratio and shorter reaction time..." (with emphasis added)
>
> "Similarly, Cabrera discloses an apparatus wherein the feedstock (introduced via pipe **68**) is contacted with the hot catalyst (introduced via WYE section **66**) within the first reaction zone (unlabeled). Thus, the apparatus of Cabrera meets the claims, since the first reaction zone will, *inherently*, be configured for a higher reaction temperature, a higher ratio of catalyst-to-oil, and reaction time in a second reaction zone **70**, by virtue of the placement of the hot catalyst **66** and feedstock **68** inlets as well as the enlarged second reaction zone **70** diameter with respect to the first reaction zone (unlabeled) diameter.
>
> Instant claim structurally reads on the apparatus of Cabrera."

Applicants disagree.

The Cabrera patent shows a catalytic cracking system involving riser cracking. In particular the patent involves converting a stacked FCCU system into a dual stage regenerator for a riser cracking reactor. In figure 2, typical of most of the disclosure in the patent, a feedstock is introduced through pipe 68 into the bottom of an internal riser 72 and an external riser 70. The catalyst and reacted hydrocarbons

are separated in reactor 64 in such a way that the catalyst is available for regeneration and the cracked hydrocarbons leave to become part of a fuel mixture.

The Office Action appears to indicate that based only on a misreading of applicants' specification, that contact between feedstock and hot catalyst somehow inherently creates the differential (i.e., "differential" as between reaction zones one and two) parameters of reaction temperature, reaction time, and ratios of catalyst to oil required by new claim 9 (former claim 1) that in turn functionally "configure" both the claimed first and second reaction zones. It is to be noted that the Cabrera patent does not show values of any of the claimed functional parameters despite being urged as an anticipatory reference in the Office Action. It is, of course, necessary that the PTO specify where every limitation found in a claim under such a rejection is similarly found in a piece of prior art; this has not been done here. Specifically, there is no reason to understand from the Cabrera patent document itself that there is any change in operating conditions for any reason between the "theorized" first reaction zone and the "theorized" second reaction zone.

Is it not more reasonable that the prior art reactor is NOT configured to perform catalytic cracking reactions, since none appear in the cited reactors?

The specification shows the ways in which the various reaction zones are configured to provide the differential in the reaction parameters required by the claims. It is to be noted that new claim 9 (former claim 1) includes the word "and" between the words specifying the physical parameters of the reaction zones ("zoned diameter" and "zone height") and the functional limitation of the respective reaction zones. The PTO has treated these independent limitations as though they were two ways of saying the same thing. They are not.

Applicants wish to emphasize that the prelift zone in each of the claims must now contain catalytic cracking catalyst.

The reactor disclosed by Cabrera et al is made up of an external riser 70 and an internal riser 72 (see FIG. 2, and Column 7, lines 18-19). Pipeline 68 is simply an inlet line of feedstock, in which no catalyst exists, so there is literally no way to lift the catalyst. Thus, pipeline (68) does not anticipate the claimed prelift zone. The PTO suggests that the second reaction zone (external riser 70) described by Cabrera et al has a diameter larger than the first reaction zone (without label). However, as it might relate to claim 5 material it is believed for one skilled ordinarily in the art that the diameter ratio of the two is less than 1.2, because the design is to prevent the linear velocity increasing too high at upper part of the riser and the riser still is a high-velocity fluidized bed with higher than 10 m/sec of a linear velocity of the effluent therein. In the present application, the diameter ratio of the two is in the range from 1.5:1 to 5:1 (i.e. claim 5). The linear velocities of effluent are much different in the two reaction zones, the linear velocity of effluent is about 10 m/sec in the first reaction zone, but less than 5 m/sec in the second reaction zone. Thus, the first reaction zone is a high-speed fluidized bed, and the second reaction zone is a fast-velocity fluidized bed. Therefore, there exist essential differences between the second reaction zone of the present application and the external riser mentioned described in Cabrera et al.

It is apparent that the Office Action has not completely considered the functional limitations specified in the claims. Those functional limitations do limit the structure to the structures that permit and allow the specified reaction. Consequently, the rejection does not meet even the basic requirements of an anticipation rejection as required by the law. The presence of the FCCU catalyst in the pre-lift zone further vitiates the stated anticipation rejection.

There are many other differences between the riser reactor required in the claims and the substantially and substantively different reactor found in the Cabrera et al reference, but a single difference is all that is needed as a distinction between the claims and the Cabrera et al reference for the Cabrera et al reference to fail as an appropriate anticipation rejection.

Withdrawal of the rejection is therefore requested.

Claim 1 -- Weinberg et al

Claim 1 stands rejected under 35 U.S.C. 102(b) as anticipated by Weinberg et al. (US 5,196,172). In support of the rejection the Examiner states:

"Weinberg et al. (column 9, line 49 to column 10, line 14), as best understood, discloses a riser reactor (TWO-STAGE RISER REACTOR; FIG. 1) having a substantially vertical linear axis, a riser reactor height, a reactor bottom and a reactor top, wherein the riser reactor comprises, in order from the reactor bottom,

"a) a prelift zone (i.e., lift gas **3a** zone) having a prelift zone diameter and height.

"b) a first reaction zone (i.e., lift section **3**) having a first reaction zone diameter and height.

"c) a second reaction zone (i.e., vaporization zone **5**; riser reactor zone **8**) having a second reaction zone height and a diameter that is larger than the first reaction zone **3** diameter; and

"d) an outlet zone (i.e., riser terminus zone **9** within stripper **12**) having an outlet zone diameter reduced with respect to the second reaction zone **5/8** diameter.

"Further defining the functional limitations as claimed in lines 9-12 and 15-18, the specification (page 5, lines 11-13) recites,

> "...the feedstock is contacted with hot catalyst in the first reaction zone *with the result that* the primary cracking reaction takes place at higher reaction temperature, higher C/O ratio and shorter reaction time..." (with emphasis added).

"Additionally, the specification (page 5, lines 17-19 recites,

> "When the temperature of the [the second reaction] zone must be maintained at lower temperature, *a quenching medium can be introduced* into the conjunct section between [the second reaction] zone and the first reaction zone..." (with emphasis added).

"Similarly, Weinberg et al. discloses and apparatus wherein feedstock (i.e. lift gas from **3a**) is contacted with a hot regenerated sorbent (i.e., heated in the order of 1250 F to 1600 F; column 8, lines 53-63) introduced via transfer line **2** to the first reaction zone **3**. Also, a quenching medium comprising feed hydrocarbon and steam is introduced via nozzles **4** into the conjunct section **4a** between the second reaction zone **5/8** and the first reaction zone **3**. Thus, the apparatus of Weinberg meets the claims, since the first reaction zone **3** will, *inherently*, be configured for a higher reaction temperature, a higher ratio of catalyst-to-oil, and a shorter reaction time than, respectively, a reaction temperature, a ratio of catalyst-to-oil, and reaction time in a second reaction zone **5/8**, by virtue of the placement of the feedstock **3a** and sorbent **2** inlets, the provision of a quenching medium in the first conjunct section **4a**, and the enlarged second reaction zone **5/8** diameter with respect to the first reaction zone **3** diameter.

Instant claims 1 structurally read on the apparatus of Weinberg et al."

Applicants disagree.

The Office Action demonstrates misunderstanding as to what the Weinberg et al. patent discloses. The PTO theorizes that the "first reaction zone" is found in the bottom of the two stage riser reactor shown both in Figures 1 and 2. Specifically, the Office Action specifies "lift section three" as the first reaction zone. In particular, the Office Action notes that "Weinberg et al discloses an apparatus wherein feedstock (i.e., lift gas from 3a) is..." See page 5 of the Office Action

However, there is no suggestion in the Weinberg et al patent that "lift gas" is any kind of a feedstock -- that is, a hydrocarbon that may be reacted (i.e. cracked) in the there-disclosed FCCU. Indeed, at column 9, lines 53 and following, is found: "lift gas (3a) which can be either steam, nitrogen, fuel gas or other similar media mixes with the adsorbent and conveys it upward in the dilute phase mixture to the feed injection point (4a)." So, it is unlikely that the "lift section (3)" can be a "first reaction zone" in that there are no apparent reactants in the material sent to that section of pipe. Neither of steam nor nitrogen undergo such cracking reactions. It is similarly not the case that a "fuel gas" will react. In the absence of a reaction, the presences of "reaction temperature" or "reaction time" are not apparent. Therefore, the Weinberg et al reference does not show a first reaction zone that is functionally configured to produce those functional results.

The actual functions of the reactor components described by the Weinberg et al patent are these: The reactor is made up of a lift section 3, a vaporization zone 5, and a riser reaction zone 8. The feed hydrocarbon initiating the reaction is introduced by nozzles 4 into the riser reactor. The vaporization zone 5 is said to be the same diameter as the riser reaction zone 8. The major difference between the two portions of the physical structure is that a coarse zeolite catalyst is introduced in the region between the two components.

Additionally, the claims each require that the prelift zone, the first reaction zone, and the second reaction zone now each require the presence of catalytic cracking catalyst. The apparatus found in Weinberg et al indicates that the line shown as "lift gas 3a" does not include any solids and only a sorbent is found in "lift zone 3". The process schemata is to separate the chunkier solids, i.e., the sorbent, from the much finer solids, (the catalyst). Consequently, two of the Weinberg et al lines/vessels specified in the Office Action as the claimed "pre-lift zone" and the "first reaction zone" do not have the required catalyst.

Consequently, Weinberg et al does not anticipate the claims and withdrawal of the rejection is requested.

Claims 1 & 2 -- Luckenbach

Claims 1 and 2 stand rejected under 35 U.S.C. 102(b) as being anticipated by Luckenbach (US 2,963,421). In support of the rejection the Examiner states;

"Regarding claim 1, Luckenbach (Figure; column 2, lines 20-35; column 3, lines 4-60), as best understood, discloses a riser reactor (PRIMARY REACTOR) having a substantially vertical linear axis, a riser reactor height, a reactor bottom and a reactor top, wherein the riser reactor comprises, in order from the reactor bottom,

"a) a prelift zone (i.e., the bottom portion of the narrower, vertically disposed conduit, communicating with tap **21**) having a prelift zone diameter and height;

"b) a first reaction zone (i.e., the upper portion of the narrower, vertically disposed conduit, immediately downstream from the prelift zone) having a first reaction zone diameter and height;

"c) a second reaction zone (i.e., the wider, vertically disposed conduit, immediately downstream from the first reaction zone, labeled with **10**) having a second reaction zone height and a diameter that is larger than the first reaction zone diameter; and

"d) an outlet zone (i.e., the overhead, vertically disposed conduit, immediately downstream from the second reaction zone) having an outlet zone diameter that is reduced with respect to the second reaction zone diameter.

Further defining the functional limitations as claimed in lines 9-12 and 15-18, the specification (page 5, lines 11-13) recites,

"...the feedstock is contacted with hot catalyst in the first reaction zone *with the result that* the primary cracking reaction takes

place at higher reaction temperature, higher C/O ratio and shorter reaction time..." (with emphasis added)

Additionally, the specification (page 5, lines 17-19) recites,

"When the temperature of [the second reaction] zone must be maintained at lower temperature, *a quenching medium can be introduced* into the conjunct section between [the second reaction] zone and the first reaction zone..." (with emphasis added).

"Similarly, Luckenbach discloses an apparatus wherein feedstock is contacted with hot catalyst (i.e., as introduced via lines **21, 25**) within the first reaction zone (see Figure). Also, a quenching medium is shown as being introduced (i.e., via nozzles **24**) into the conjunct section between the second reaction zone and the first reaction zone (see Figure). Thus, the apparatus of Luckenbach meets the claims, since the first reaction zone will, *inherently*, be configured for a higher reaction temperature, a higher ratio of catalyst-to-oil, and reaction time in a second reaction zone, by virtue of the placement of feedstock and catalyst inlets **21/25**, the provision of quenching medium **24** to the first conjunct section, and the enlarged second reaction zone diameter with respect to the first reaction zone diameter.

"Regarding claim 2, Luckenbach discloses the total height of said prelift zone, said first reaction zone, said second reaction zone, and said outlet zone is in the range of from about 10 meters to about 60 meters (i.e., specifically, 70- 180 feet: column 6, TABLE II).

"Instant claims 1 and 2 structurally read on the apparatus of Luckenbach."

Applicants disagree.

In urging an inherency argument, it is incumbent upon USPTO to provide, with a high level of specificity, indications of where each of the various features or components of the cited reference conform to the claims. In this instance, the PTO considers the portion of the Luckenbach apparatus

situated in the single figure above the introduction of fluidization gas 21 and below the "feed nozzle 24" to correspond to the claim 1 and claim 8 "first reaction zone". It is instructive to note that, without specifying any situs in the Luckenbach patent as providing a basis for such a conclusion, that somehow this unspectacular portion of pipe somehow has been "configured for a higher reaction temperature, a higher ratio of catalyst to oil, and a lower reaction time." However, the rejection does not provide any indication where any reactable material may be found in that supposed "first reaction zone". Specifically, as far as can be determined from a complete reading of the Luckenbach reference, the only hydrocarbons present in that specified vertical section of pipe are a few stripped hydrocarbons that may be introduced from stripper 12 via line 51 and recycled via line 25. Said another way: if the materials in the fluidization gas don't react, they have neither a "reaction" temperature nor a "reaction" time.

Since the only apparent introduction of feedstock to the reactor portion of the apparatus is via feed nozzles 24, it is unclear where any subsequent quench material might be introduced.

Since the PTO has not provided a basic *prima facie* correspondence between the components required by the claim and their respective functions, the rejection is inappropriate and should be withdrawn.

Additionally, the portion of the Luckenbach device specified by the PTO as the "prelift zone" "i.e., the bottom portion of the narrower, vertically disposed conduit, communicating with tap **21"** contains only a gas or steam. No catalyst is described. The patent does not anticipate the combination required by the claims.

Furthermore, with regard to claim 2, since the PTO has not provided any guidance, based upon the Luckenbach reference itself, as to either the presence of or the size of a corresponding "first reaction zone", the total height of any theorized sequence of zones including a "said first reaction zone" is not properly shown. Indeed, Table 2 as referenced in the Office Action, specifies the length of "70 to 80 feet" only in relation to "reactor 10". No sum of the first and second reaction zones and outlet zones, as specified in the Office Action, is identified in that Table. Withdrawal of the rejection is requested.

Rejection under 35 U.S.C. 103(a)

Claims 3-8 stand rejected under 35 U.S.C. 103(a) as unpatentable over Luckenbach (US 2,963,421). In support of the rejection the Examiner states:

"Regarding claim 3, Luckenbach discloses *by illustration* a prelift zone height roughly equal to about 5% of the height of the riser reactor (see Figure). Additionally, Luckenbach discloses that the *exact* diameter of reactor **10** lies within the range of 2-15 feet (i.e. 0.6m to 4.7m; Table II). Given that the maximum diameter is less than the instantly recited diameter of 5 meters, the prelift zone diameter *inherently* lies within the recited range of about 0.02 meters to about 5 meters. Although the reference is silent as to the *exact* range for the prelift zone height, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate height (i.e., such as the instantly recited height) for the prelift zone in the apparatus of Luckenbach, on the basis of suitability for the intended use, since changes in size involves only ordinary skill in the art, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum of workable ranges involves only routine skill in the art, *In re Aller, 105 USPQ 233.*

"Regarding claim 4, Luckenbach discloses *by illustration* a first reaction zone diameter roughly equal to the prelift zone diameter (and hence, a ratio of about 1:1), and further discloses *by illustration* a first reaction zone height roughly equal to about 30% of the height of the riser reactor (Figure). Although the reference is silent as to disclosing the *exact* ranges for the ratio of first reaction zone diameter to prelift zone diameter, or the first reaction zone height, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select appropriate dimensions (i.e., such as the instantly recited dimensions) for the first reaction zone relative to the prelift zone diameter and riser reactor height in the apparatus of Luckenbach, on the basis of suitability for the intended use, since changes in size involves only ordinary skill in the art, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller 105 USPQ 233.*

"Regarding claim 5, Luckenbach discloses *by illustration* a second reaction zone diameter roughly twice as large as the first reaction zone diameter (and hence, a ratio of about 2:1), and further discloses *by illustration* a second reaction zone height of about 605 of the height of the riser reactor (see Figure). Although the reference is silent as to disclosing the *exact* ranges for the ratio of the

second reaction zone diameter to the first reaction zone diameter, or the second reaction zone height, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select appropriate dimensions (i.e., such as the instantly recited dimensions) for the second reaction zone relative to the first reaction zone and the riser reactor height in the apparatus of Luckenbach, on the basis of suitability for the intended use, since changes in size involves only ordinary skill in the art, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller, 105 USPQ 233.*

"Regarding claim 6, Luckenbach discloses *by illustration* a outlet zone diameter roughly equal to the first reaction zone diameter (hence, a ratio of about 1:1), and further discloses *by illustration* an outlet zone height of about 5% the height of the riser reactor (see Figure). Although the reference is silent as to disclosing the *exact* ranges for the ratio of the outlet zone diameter to the first reaction zone diameter, or the outlet zone height, it would have been obvious for one of ordinary skilled that art at the time the invention was made to select appropriate dimensions (i.e., such as the instantly recited dimensions) for the outlet zone relative to the first reaction zone diameter and the riser reactor height in the apparatus of Luckenbach, on the basis of suitability for the intended use, since changes in size involves only ordinary skill in the art, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum of workable ranges involves only routine skill in the art, *In re Aller, 105 USPQ 233.*

"Regarding claims 7 and 8, Luckenbach discloses a first junction section between said first reaction zone and said second reaction zone, and a second junction section between said second reaction zone and said outlet zone, wherein the junction sections both comprise circular truncated cone shapes (see Figure). Although the reference is silent as to the *exact* vertex angle defined by each of the junction sections, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate vertex angle (i.e., such as the instantly recited vertex angles) for the first and second junction

section in the apparatus of Luckenbach, on the basis of suitability for the intended use, since changes in size involves only ordinary skill in the art, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller, 105 USPQ 233.*"

Applicants disagree.

The deficiencies of the Luckenbach patent have been discussed at length above. As the Office Action recognizes, the Luckenbach reference fails to disclose the remaining limitations found in the depending claims. Indeed, the concept of "inherency" in an obviousness rejection is somewhat foreign. Furthermore, the urging in the Office Action that all of the limitations found in the depending claims would be readily determinable by one having ordinary skill in the art based upon the meager teaching of the Luckenbach reference is not supportable. First of all, none of the limitations found in those claims are shown in the Luckenbach reference to be "result-+effective" parameters. The reference to *in re Aller*, 105 USPQ 233 requires that the USPTO first identify a disclosed parameter as a parameter to be modified to produce a specific result before such a random modification to that parameter becomes pertinent. This has been a direction for at least twenty five years. See *in re Antonie*, 195 USPQ 6 (CCPA 1977). The "obvious to try" suggestion found in the Office Action is simply no longer pertinent. The reference must teach or suggest at least a direction for a modification before the kinds of modifications suggested in the Office Action are permitted.

Withdrawal of the rejection under 35 U.S.C. 103 is requested.

CONCLUSION

Each of the claims in this application is in immediate condition for allowance. The Examiner is requested to withdraw the outstanding rejections of the claims and to pass this application to issue. If a telephone conference would expedite the prosecution of this application, the Examiner is urged and invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 456962000200. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: May 25, 2004

Respectfully submitted,

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